Appendix F

Air Quality Analysis

Air Quality Assessment for Musick Jail Expansion

County of Orange

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1.0 EXISTING AIR QUALITY

The proposed project is the expansion of the existing Musick jail facilities which encompasses 100 acres. The project site lies southeast of the future extension of Alton Parkway and northwest of the existing Bake Parkway, in the unincorporated area of the County of Orange.

The Musick Jail Expansion will consist of three segments. Segment I involves the development of Complex 1. The facilities within Complex 1 are the Intake/Release/Medical/Administration center, some medical housing, warehouse complex, and housing for 864 new inmates. The warehouse complex will contain a new cook-chill kitchen, a large laundry facility, and a central plant. The medical center will also include negative pressure cells.

Segment II consists of the construction of Complex 2. During this segment, the existing 1,256 inmates from the old Musick Facility will move into Complex 2, as well as an additional 1,624 new inmates will be added into this complex. Segment III includes the demolition of the existing housing units and support facilities, and the construction of Complex 3 which will add 3,840 new inmates into this complex. The total inmates on-site at buildout will be 7,584.

The Musick Jail Expansion will also include a new 20,000 square foot Sheriff's Station at the southeasterly corner of the site, and the relocation of the Interim Care Facility (ICF). The construction of these two facilities can take place during any of the three phases depending upon when funding is available. The site plan of the Musick Jail expansion is shown in Exhibit 1.

This report will focus on the potential for regional air quality impacts. The proposed project is within the South Coast Air Basin (SCAB) and thus is subject to a review with respect to the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP). The SCAB comprises all of Orange County and the non-desert portions of Los Angeles, Riverside and San Bernardino Counties.

1.1 Climate

The climate in and around the proposed project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high pressure cell over the Pacific Ocean. It maintains moderate temperatures and comfortable humidities, and limits precipitation to a few storms during the winter "wet" season. Temperatures are normally mild, excepting the summer months, which commonly bring substantially higher temperatures. In all portions of the basin, temperatures well above 100 degrees F. have been recorded in recent years. The annual average temperature in the basin is approximately 62 degrees F.

Winds in the project area are almost always driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime on-shore sea breezes. At night the wind generally flows and reverses direction traveling towards the sea. Wind direction will be

altered by local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to the other, the dominant wind direction rotates into the south and causes a minor wind direction maximum from the south. The frequency of calm winds (less than 2 miles per hour) is less than 10 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours.

Southern California frequently has temperature inversions which inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Ground based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold, early winter mornings. Under conditions of a ground based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the SCAB and is responsible for the high levels of ozone observed during summer months in the air basin.

1.2 Air Quality Management

The proposed project is located in the SCAB and, jurisdictionally, is the responsibility of the South Coast Air Quality Management District (SCAQMD) and to a lesser extent, the California Air Resources Board (CARB). The SCAQMD sets and enforces regulations for stationary sources in the basin and develops and implements Transportation Control Measures. The CARB is charged with controlling motor vehicle emissions. CARB establishes legal emission rates for new vehicles and is responsible for the vehicle inspection program. Other significant agencies in the air quality management for the basin include the U.S. Environmental Protection Agency (EPA) and the Southern California Association of Governments (SCAG). The EPA implements the provisions of the federal Clean Air Act. This act establishes ambient air quality standards that are applicable nationwide. In areas that are not achieving the standards the Clean Air Act requires that plans be developed and implemented to meet the standards. The EPA oversees the efforts in this air basin and insures that appropriate plans are being developed and implemented. The primary agencies responsible for writing the plan are SCAG and the SCAQMD, and the plan is called the Air Quality Management Plan (AQMP).

SCAQMD and SCAG, in coordination with local governments and the private sector, have developed the Air Quality Management Plan (AQMP) for the air basin. The AQMP is the most important air management document for the basin since it provides the blueprint for meeting state and federal ambient air quality standards. The 1994 AQMP was adopted locally on September 9, 1994, by the governing board of the SCAQMD. CARB amended the 1994 AQMP and submitted it to the U.S. Environmental Protection Agency (EPA) as part of the California State Implementation Plan on November 15, 1994. The document needs to be reviewed and approved by the U.S. Environmental Protection Agency. State law mandates the revision of the AQMP at least every three years, and federal law specifies dates certain for developing attainment plans for criteria pollutants. The 1994 AQMP supersedes the 1991 AQMP revision that was adopted locally by the SCAQMD on July 12, 1991. The 1994 revision to the AQMP was adopted in response to the requirements set forth in the California Clean Air Act (CCAA) and the 1990 amendments to the Federal Clean Air Act (CAA). The 1997 AQMP and PM10 Attainment Plan is currently under development and is expected to be adopted in October 1996. The PM10

attainment plan is due to the EPA in February 1997.

The SCAB has been designated by the U.S. Environmental Protection Agency (EPA) as a non-attainment area for ozone, carbon monoxide, nitrogen dioxide, and suspended particulates. The CCAA mandates the implementation of the program that will achieve the California Ambient Air Quality Standards (CAAQS) and the CAA mandates the implementation of new air quality performance standards.

Attainment of all federal PM10 health standards is to occur no later than December 31, 2006, and ozone standards are to be achieved no later than November 15, 2010. For nitrogen oxides (NOx) and CO, the deadlines are December 31, 1996 and December 31, 1997, respectively.

The overall control strategy for the AQMP is to meet applicable state and federal requirements and to demonstrate attainment with ambient air quality standards. The 1994 AQMP uses two tiers of emission reduction measures; (1) short- and intermediate-term measures, and (2) long-term measures.

Short- and intermediate-term measures propose the application of available technologies and management practices between 1994 and the year 2005. These measures rely on known technologies and proposed actions to be taken by several agencies that currently have statutory authority to implement such measures. Short- and intermediate-term measures in the 1994 AQMP include 61 stationary source, 16 on-road, 10 off-road, 11 transportation control and indirect source, 2 advanced transportation technology, and 4 further study measures. All of these measures are proposed to be implemented between 1995 and 2005. These measures rely on both traditional command and control and on alternative approaches to implement technological solutions and control measures.

To ultimately achieve ambient air quality standards, additional emissions reductions will be necessary beyond the implementation of short- and intermediate-term measures. Long-term measures rely on the advancement of technologies and control methods that can reasonably be expected to occur between 1994 and 2010. These long-term measures rely of further development and refinement of known low- and zero-emission control technologies for both mobile and stationary sources, in addition to technological breakthroughs.

1.3 Monitored Air Quality

Air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates for the SCAB have been made for existing emissions ("Final 1994 Air Quality Management Plan," April 1994). The data indicate that mobile sources are the major source of regional emissions. Motor vehicles (i.e., on-road mobile sources) account for approximately 50 percent of reactive hydrocarbon and nitrogen oxide emissions, and almost 80 percent of carbon monoxide emissions.

The nearest air quality monitoring station to the proposed project for which air quality data is available is the SCAQMD Source Receptor Area 19. The data collected at the Source Receptor Area 19 is considered to be representative of the air quality experienced in the vicinity of the project area. However, the monitored air quality data at Source Receptor Area 19 is available

only for ozone, CO and PM10. Currently, no air quality data is collected for Source Receptor Areas 20 and 21. The next closest monitoring station is Source Receptor Area 18 where monitoring data is available for nitrogen dioxide and sulfur dioxide. The air quality monitored data from 1992 to 1994 for these pollutants are shown in Tables 1 and 2. (The 1994 air quality monitoring data is the latest available data.)

Table 1
Air Quality Levels Measured at the Source Receptor Area 19 Ambient Air Monitoring Station

Pollutant	California Standard	National Standard	Year	Maximum Level	Days State Std. Exceeded
Ozone	0.09 ppm for 1 hr.	0.12 ppm for 1 hr.	1994	.18	16
			1993	.16	22
			1992	.16	31
CO	20 ppm for 1 hour	35 ppm for 1 hour	1994	8	0
			1993	7	0
			1992	10	0
CO	9.0 ppm for 8 hour	9 ppm for 8 hour	1994	5.4	0
			1993	4.1	0
			1992	7.3	0
Particulates PM10	50 ug/m^3 for 24 hr.	150 ug/m^3 for 24 hr.	1994	91	7(12%)*
			1993	115	7(12%)*
			1992	83	5(8%)*

* PM10 samples were collected every 6 days. The percentages refer to the percent of samples exceeding the standard and not the number of days per year that the standard was exceeded.

Table 2
Air Quality Levels Measured at the Source Receptor Area 18
Ambient Air Monitoring Station

Pollutant	California Standard	National Standard	Year	Maximum Level	Days State Std. Exceeded
NO_2	0.25 PPM for 1 hour	0.053 PPM AAM	1994	.16	0
			1993	.14	0
			1992	.13	0
SO_2	0.04 ppm for 24 hours	0.14 ppm for 24 hours	1994	.02	0
			1993	.01	0
			1992	.02	0

According to the monitoring data in Table 1, ozone is the air pollutant of primary concern in the project area. In 1994, the state ozone standard was exceeded almost one out of every 23 days, and the federal standard was exceeded one out of every 73 days. Ozone levels have consistently exceeded the standards. Ozone is a secondary pollutant; it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and nitrogen dioxide, which occurs only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the Source Receptor Area 19 area. Many areas of the SCAQMD contribute to the ozone levels experienced at the Source Receptor Area 19 monitoring station, with the more significant areas being those directly upwind.

Carbon monoxide is another important pollutant that is due mainly to motor vehicles. High levels of carbon monoxide commonly occur near major roadways and freeways. Carbon monoxide levels in the project region currently are within both state and federal standards. However, CO may potentially be a problem in the future for areas adjacent to freeways and other major roadways. Analysis of the potential CO impacts due to the project requires computer modeling and will be shown in the local air quality section.

The state standards for particulate matter (PM10) have been exceeded at the Source Receptor Area 19. monitoring station consistently. State standards in the last three years were exceeded for approximately 12 percent of the days measured in 1994 and 1993, and 8 percent in 1992. Particulate levels in the area are due to natural sources, grading operations, and motor vehicles.

According to the EPA some people are much more sensitive than others to breathing fine particles (PM10). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10. Other groups considered sensitive are smokers and people who cannot breath well through their noses. Exercising athletes are also considered sensitive, since many breathe through their mouth.

According to the monitored data shown in Table 1, other than ozone and PM10 as mentioned above, no state or federal standards were exceeded for the remaining criteria pollutants.

2.0 POTENTIAL AIR QUALITY IMPACTS DUE TO THE PROJECT

Air quality impacts are usually divided into short term and long term. Short term impacts are usually the result of construction or grading operations. Long term impacts are associated with the built out condition.

2.1 Short Term Construction Impacts

The project site comprises of 100 acres. The construction will be divided into three segments. According to Culbertson, Adams & Associates, it appears that most of the grading will not occur until Segment III of the construction, so grading will be maximized at Segment III, and minimal in Segments I and II. The area is generally flat, and thus the grading of the site will be minor. It is estimated that the maximum gradable area is about 50% of the total site, or 50 acres is gradable. As a worst case scenario, the project is assumed be completed in 2 years once the construction is started.

Temporary impacts will result from project construction activities. Air pollutants will be emitted by construction equipment and dust will be generated during grading and site preparation. Construction activities for large development projects are estimated by the U.S. Environmental Protection Agency ("Compilation of Air Pollutant Emission Factors") to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust as required by SCAQMD Rule 403, the emissions can be reduced by 50 percent.

Applying the above factors to the 50 acres of the gradable site, a 3 month grading cycle, and an estimated minimum 2 year project buildout, results in an estimate of 30 tons per year (average of 163 pounds per day) of particulate emissions released. The above estimate represents a worst case annualized estimate of the particulate emissions generated. The 163 pounds per day of particulates generated by the grading of the project is minor when compared to the total 1,073 tons per day of particulate matter currently released in the whole South Coast Air Basin (SCAB). However, according to the SCAQMD's CEQA Handbook, particulates emissions greater than 150 pounds per day should be considered significant.

It should be noted that the impact due to grading is very localized. Additionally, this material is inert silicates, rather than the complex organic particulate matter released from combustion sources which are more harmful to health. In some cases grading may be near existing development. Care should be taken to minimize the generation of dust. Common practice for minimizing dust generation is watering prior to and during grading. Without watering, dust generation would be double the amount mentioned previously (2 x 163 pounds/day = 326 pounds/day). Additional mitigation measures are proposed in Section 3.0.

Heavy-duty equipment emissions are difficult to quantify because of day to day variability in construction activities and equipment used. Typical emission rates for construction equipment were obtained from the SCAQMD Air Quality Handbook. For a project of this size, 5 pieces of heavy equipment may be expected to operate at one time. The number of pieces of equipment

assumed included 1 scraper, 1 grader, 1 tractor, 1 water truck, and 1 miscellaneous truck. If all of the equipment operated for 8 hours per day the following emissions would result; approximately 34 pounds per day of carbon monoxide, 5 pounds per day of ROG, 88 pounds per day of nitrogen oxides, 10 pounds per day of PM10, and 8 pounds per day of sulfur oxides. There will also be some emissions generated by construction workers travel to and from the job site. However, information is not available to project these emissions, and they are usually small in comparison to the other construction emissions. (See appendix for data used in calculation). Only the PM10 emission is greater than the Significance Emission Threshold established by the SCAQMD in the CEQA Air Quality Handbook. The construction emissions data is summarized in Table 3. Mitigation measures for the construction activities of the project recommended by the SCAQMD are provided in Section 3.0.

Table 3
Worst Case Construction Emissions

	Emissions (Pounds/Day)				
Pollutant	Employee Travel	Grading Activities (PM10 only)	Equipment Emissions	Total Emissions	SCAQMD Thresholds
Carbon Monoxide	11.72	--	33.57	45.29	550
ROC	1.20	--	5.07	6.28	75
Nitrogen Oxides	1.16	--	88.19	89.36	100
Particulates (PM10)	0.16	163	9.78	172.68	150
Sulfur Oxides	0.08	--	8.31	8.39	150

2.2 Long Term Regional Air Quality

The main source of regional emissions generated by the project will be from motor vehicles. Other emissions will be generated from the combustion of natural gas for space heating and the generation of electricity. Emissions will also be generated by the use of natural gas and oil for the generation of electricity off-site.

2.2.1 Total Project Emissions

The total daily emissions will be mainly due to vehicular emissions, emissions due to on-site combustion of natural gas for space heating and water heating, and emissions due to off-site electrical usage. The generation of electrical energy by the combustion of fossil fuels results in additional emissions off-site. Emission factors to estimate the total project emissions were obtained from the Air Resources Board (ARB). The emission factors version EMFAC7F was utilized.

Estimates were made of the vehicular emissions that would be generated by the proposed project.

The traffic data for the Musick Jail project are provided by Culbertson, Adams & Associates, August 6, 1996. The total average daily trips (ADT) for the Music Jail expansion without the existing jail are 4,253, and the average trip length is approximately 13.7 miles. These translate to a total vehicle mile traveled (VMT) of 58,266. An average speed of 25 miles per hour was assumed.

In addition, emissions will be generated on-site by the combustion of natural gas for space heating and water heating, and off-site emissions due to electrical usage. According to Culbertson, Adams & Associates, the proposed development at build-out is projected to consume approximately 58,584 kWH per day of electricity, and approximately 417,094 cubic feet per day of natural gas. The existing jail emissions will offset these projected total energy emissions, but by an unknown amount. The total project emissions are presented in Table 4.

Table 4
TOTAL PROJECT EMISSIONS

	SOURCE				
Pollutant	Vehicular Emissions (pounds/day)	On-Site Emis. from Natural Gas Combustion (pounds/day)	Off-Site Emis. from Electrical Generation (pounds/day)	Total Daily Emissions (pounds/day)	Total Daily Emissions *(tons/day)*
CO	335.65	8.34	11.72	355.71	*0.18*
TOG/ROG	45.90	2.21	0.59	48.69	*0.02*
NOx	94.66	0.00	67.37	162.03	*0.08*
PM10	20.55	0.08	2.34	22.98	*0.01*
SOx	9.65	0.00	7.03	16.68	*0.01*

2.3.3 Total Regional Emissions

The main source of emissions generated by the proposed project will be from motor vehicles. Other sources of emissions will be natural gas combustion for space heating, electrical generation and various activities that are yet to be defined and quantified. Emissions for the proposed project were calculated using methodology and emission factors contained in the SCAQMD's CEQA Air Quality Handbook. Traffic data provided by Culbertson, Adams & Associates was also utilized.

The proposed project is anticipated to be completed by 2006. The Orange County emission data is available for year 2010 and are from the 1991 revisions to the AQMP. (Since the 1994 AQMP revisions do not have a break down in the emission data per individual county, the 1991 AQMP county wide emissions are the latest available data to use for comparison purposes.) The Orange County emissions will be compared with the project emissions. The cumulative emissions generated by the proposed project are presented in the first line and second line of Table 5. As

can be seen, the regional increases in all pollutants due to the cumulative project emissions when compared to Orange County emissions will be less than 0.06 percent.

Table 5
Comparison of Emissions

Contaminant	CO	ROG	NOx	PM10	SOx
Emissions per Day					
Total Project Emis. (Pounds/Day)	356	49	162	23	17
Orange County (Tons/Day)	622	227	173	268	15
SCAQMD Thresholds of Significance (Lbs./Day)	*550*	*55*	*55*	*150*	*150*
Project Emissions as a Percent of Regional (County) Emissions					
Proposed Project	0.028%	0.011%	0.047%	0.004%	0.056%

As can be seen in Table 5, on the regional basis, the proposed project will contribute approximately 0.06 percent or less when compared with the County emissions. The primary source of the project emissions will be from motor vehicles. The SCAQMD recommends that feasible and appropriate mitigation measures be incorporated into potentially significant projects. Section 3.0 contains a discussion of the AQMD list of mitigation measures including the potential reductions of the measures of emissions.

Note that project emissions exceed the SCAQMD thresholds of significance for NOx. Note also that these thresholds are not necessarily an appropriate reference to determine the significance of project emissions. These thresholds are taken from the "1993 CEQA Air Quality Handbook", which states that the criteria "are consistent with the federal Clean Air Act definition of a significant source in an area classified as extreme for ozone." While it is correct that the thresholds are consistent as such, the SCAQMD ignores the fact that such criteria were developed initially by the U.S. EPA to be applied to point source emissions, such as an industrial smokestack. Comparisons between emissions from an extreme point source and emissions from the proposed project are clearly inappropriate in this context. Emissions from the proposed project are primarily from motor vehicles traveling in an area with a radius of at least 13.7 miles. Emissions from the Musick Jail Specific Plan bear no resemblance to emissions from industrial sources.

Nevertheless, since the increase in the emission levels due to the proposed project are projected to exceed the SCAQMD's threshold of significance for NOx emissions, the SCAQMD recommends that feasible and appropriate mitigation measures be incorporated into projects that

exceed the significant threshold. Section 3.0 contains a discussion of the AQMD list of mitigation measures including the potential reductions of the measures of emissions. The effectiveness of these mitigation measures will be quantified as best as possible. For most cases, however, the reduction in emissions cannot be quantified.

It is also very important to note that, while the SCAQMD states that all projects with emissions exceeding the thresholds are to be considered significant, the final decision as to whether a project is declared to have significantly adverse environmental impacts lies, by law, with the lead agency. It is not within the purview of the SCAQMD to declare that projects will have significant impacts or not.

2.4 SCAQMD Permits

2.4.1 Central Plant

A central plant or boiler will be provided on-site primarily for the use of heating water for the proposed Musick jail facility. The pollutants from steam being discharged from the central plant are regulated by the SCAQMD. According to the SCAQMD Rule 1146, if the heat input capacity is rated equal to or greater than 5 million Btu per hour, then a permit is required for steam generators or similar type of operations. A permit is required for the proposed central plant if it exceeds this limit. At this time, the size or capacity of the proposed central plant on the project site is not known.

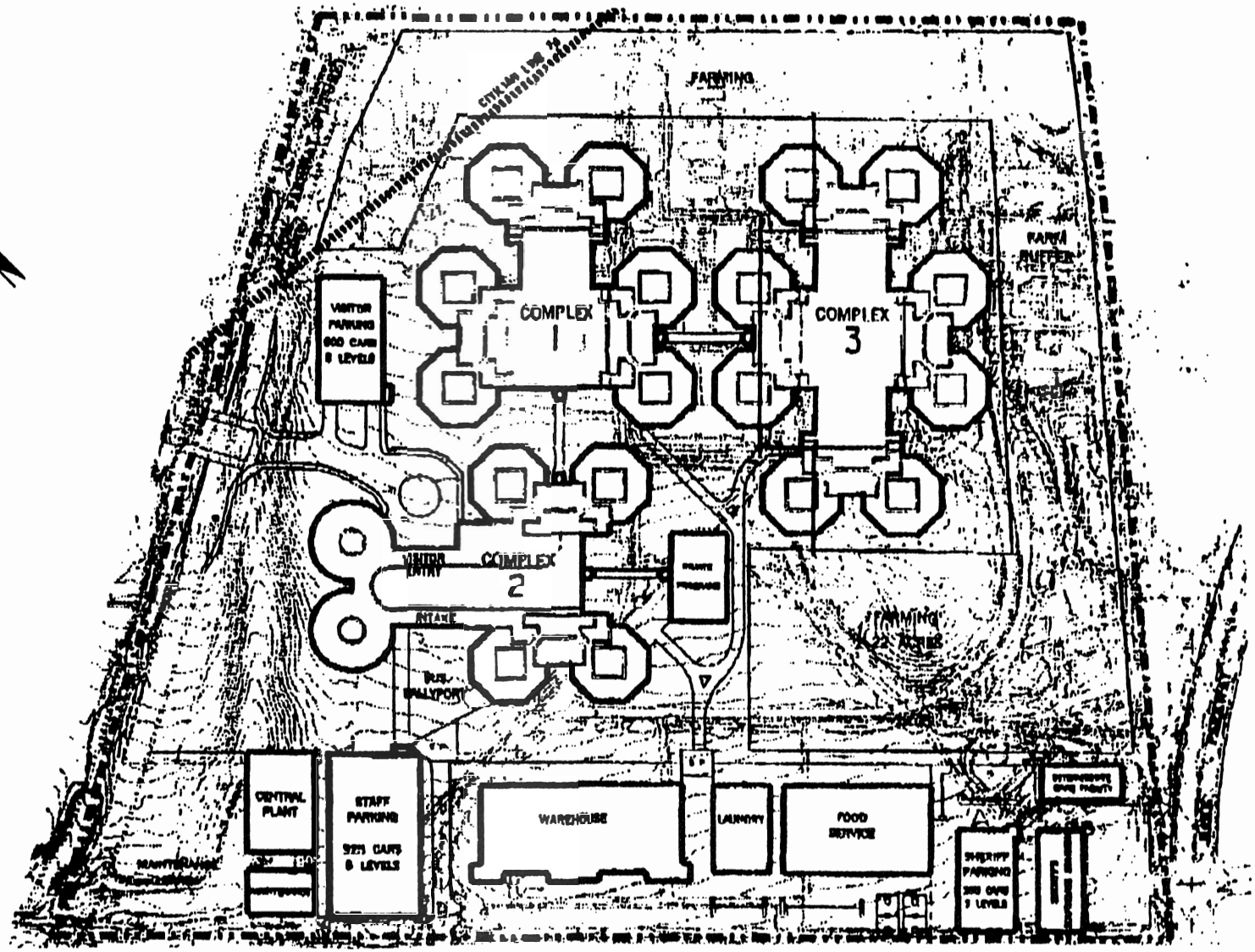
2.4.2 Kitchen Facility

The proposed jail facility will include a new large kitchen. The kitchen is a cook and chill facility which will provide food service for the entire Musick Jail facility. According to the SCAQMD Rule 219(i), a permit is required if charbroilers are to be used regardless of the Btu rating. However, at this time, no charbroilers are anticipated to be used at the proposed kitchen facility.

In addition, there is some concern with odor potentially generated by the cooking vents from the proposed kitchen. The nearest existing residential land uses are located to the southeast, and at its closest point is 700 feet from the boundary of the jail. The potential odor impact is determined by the direction of the wind flow and the location of the nearest existing residential areas. The wind roses, which show the wind patterns for the South Coast Air Basin (SCAB) have been developed by the SCAQMD. According to the wind roses, the wind flow is primarily towards the north and northeast (refer to Exhibit 1). However, the nearest existing residential area is located to the southeast of the project site. This means that the typical wind flow is away from the existing residential areas. As a result, no potential odor impact is anticipated for the proposed kitchen facility.

2.4.3 Laundry Facility

There will also be a laundry facility on the project site. It is a straight laundry facility which includes the use of washers and dryers. The SCAQMD Rule 1102 dictates that a permit is required if solvents are to be used for dry cleaning process. At this time, it is not known whether dry cleaning will be proposed for the laundry facility. However, if dry cleaning will occur, an SCAQMD permit is required.



Predominant Wind Flow

Nearest Existing Residential Area

Exhibit 1

Plan

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2.4.4 Negative Pressure Cells

The medical center on the jail facility will include some negative pressure cells (or test cells). Some medical test cells will be of a negative pressure variety, which means that the air is discharged from the site only after being sent through a filtration system. The negative pressure cells were also known as fume hoods. The SCAQMD Rule 219(c) exempts test cells of this type in laboratories from requiring a permit. However, the need for a permit to operate other uses of the medical center, if required, will be obtained prior to construction. At the present time, other specific uses of the medical center is not known.

In summary: 1) Sources regulated by SCAQMD when potential for significant air pollutants
2) Permits may be required which will reduce levels to acceptable
3) No significant impact expected from these sources

3.0 MITIGATION MEASURES

The following sections provide a summary of possible air quality strategies that could be considered for development of the project site. At this level of project design and environmental review, it is not possible to accurately quantify the effectiveness of mitigation measures. The following are mitigation measures that may be appropriate for the proposed project. Many of the mitigation measures are commonly recommended by SCAQMD for inclusion into development projects. The measures listed below, and others as appropriate, should be incorporated in the final plans when feasible to reduce emissions as recommended by the SCAQMD.

3.1 Short Term Construction Impacts

3.1.1 Recommended Mitigation

The analysis in Section 2.1 indicates that the PM10 emissions due to the construction of the proposed project are projected to be greater than the significant threshold (150 pounds/day), and therefore, will result in significant short term air quality impacts. The following are mitigation measures commonly recommended by the SCAQMD, and are intended to reduce pollutant emissions from construction activities. These measures should be incorporated in the final plans when feasible to reduce emissions as recommended by the SCAQMD.

1: Use low emission mobile construction equipment, where feasible. This measure is recommended. Emission rates are necessary to determine the emissions of any vehicle. At present, the most reliable rates that are available for construction equipment are those provided by the SCAQMD in the April 1993 CEQA Air Quality Handbook. (SCAQMD Rule 1620, which was adopted September 8, 1995, will issue Mobile Source Emission Reduction Credits to off-road equipment operators who voluntarily operate any low- or zero-emission mobile equipment that results in reductions beyond those required by existing regulations.)

2: Develop a trip reduction plan to comply with SCAQMD Rule 2202. SCAQMD Rule 2202 has revamped the requirements for carpooling. In general, mandatory carpooling is no longer required. Compliance with Rule 2202 will be mandatory.

3: Water site and clean equipment morning and evening. This is a SCAQMD requirement. Cleaning the construction equipment is recommended despite the fact that emissions reductions from this activity can not be quantified. The CEQA Air Quality Handbook states that washing construction vehicles before they leave the site will control particulate emissions from dust blown off trucks and other equipment by 40% to 70%.

4: Wash off trucks leaving the site. This is required by the SCAQMD. SCAQMD Rule 403 requires the "removal of particulate matter from equipment prior to movement on paved streets" to control particulate emissions. This measure will control particulate emissions from this activity by 40% to 70%.

5: Spread soil binders on site, unpaved roads and parking areas. SCAQMD Rule 403 requires that "every reasonable precaution (is taken) to minimize fugitive dust emissions" from grading operations to control particulate emissions.

6: Apply chemical soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded areas which remain inactive for 96 hours). Chemical soil stabilizers will result in a 40% to 85% reduction in particulate emissions from wind erosion.

7: Reestablish ground cover on construction site through seeding and watering on portions of the site that will not be disturbed for lengthy periods (such as two months or more). This measure would reduce particulate emissions by 20% to 65%.

8: Sweep streets if silt is carried over to adjacent public thoroughfares. This measure prevent emissions rather than reduce emissions.

9: Reduce traffic speeds on all unpaved road surfaces to 15 miles per hour or less. A reduction in travel speeds to 15 miles per hour on unpaved road surfaces normally reduces particulate emissions from this activity by approximately 40% to 70%.

10: Suspend grading operations during first and second stage smog alerts. This measure would almost entirely eliminate emissions from the heavy equipment used in grading activities.

11: Suspend all grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour. This measure is very similar to the previous measure. This measure, however, is specifically intended to minimize particulate emissions rather than reduce the broad range of pollutant emissions.

12: Maintain construction equipment engines by keeping them tuned. This measure does not really mitigate an impact. Its purpose is to ensure that the air quality impacts that are generated by construction activities associated with the project are consistent with the impacts that are projected in the air quality report. The emissions data in the air quality report are based upon emission rates for equipment that has been properly maintained. If the actual equipment used during the project's construction is not properly maintained, the emissions produced by that equipment will exceed the projected emissions. This measure, when it is complied with, helps to ensure that emissions during the project's construction will not exceed the projected emissions.

13: Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD

Rules 431.1 and 431.2. The use of low sulfur fuel would reduce emissions of pollutants (particularly sulfur oxides) in the vicinity of the project.

14: Provide on-site power sources during the early stages of the project. The intent of this measure is to minimize or eliminate the use of portable generators.

15: Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators. This measure overlaps with the immediately preceding and following measures. In order to quantify these measures, specific information is required, including, but not limited to, how much power would be needed, how it would be supplied in the absence of this measure, and how it would be supplied with the implementation of this measure.

16: Use low emission on-site stationary equipment (e.g., clean fuels). As stated above, this measure overlaps with the previous measure.

17: Configure construction parking to minimize traffic interference. This measure is recommended. This practice would entirely avoid the disruption of traffic flow. The measure has been designed to avoid creating an impact.

18: Minimize obstruction of through-traffic lanes. As with the above measure, the measure has been designed to avoid creating an impact. It is recommended to follow such a guideline, where feasible.

19: Provide a flagperson to properly guide traffic and ensure safety at construction sites. This measure is recommended, it relates to air quality in only a very indirect way.

20: Schedule operations affecting traffic for off-peak hours, where feasible.

21: Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service). This is another measure aimed at avoiding the creation of an impact in the first place and is, therefore, recommended.

3.2 Regional Air Quality Impacts

Regional air quality impacts were identified for the proposed project. To be consistent with regional air planning efforts such as the 1994 AQMP, all projects of significant size need to incorporate all measures possible to minimize air emissions. Therefore the following measures are recommended in the final plans when feasible to reduce emissions as recommended by the SCAQMD.

3.2.1 Recommended Mitigations

Some of the most significant reductions in regional air pollutant emissions are attainable through programs which reduce the vehicular travel associated with the project. Support and compliance with the 1994 AQMP for the basin is the most important measure to achieve this goal. The AQMP includes improvement of mass transit facilities and implementation of vehicular usage

reduction programs. Additionally, energy conservation measures are included. In order to reduce the total project trips, a Transportation Demand Management program should be developed. This program is to be designed to reduce project trips to reduce the traffic congestion and the project emissions. These potential TDM measures and the AQMP measures are summarized below. At this time the project is not defined sufficiently to determine whether each of the measures are applicable. However, the SCAQMD has required these types of measures on past projects and should be incorporated in the final plans when feasible to reduce emissions as recommended by the SCAQMD.

23: Provide bicycle lanes, storage areas, and amenities, and ensure efficient parking management. This measure is recommended.

24: Develop a trip reduction plan to comply with SCAQMD Rule 2202. SCAQMD Rule 2202 has revamped the requirements for carpooling. In general, mandatory carpooling is no longer required. Compliance with Rule 2202 will be mandatory.

25: Improve the thermal integrity of the buildings and reduce the thermal load with automated time clocks or occupant sensors. This measure applies to any buildings that would be built under any of the alternatives and would include the terminals and/or any commercial or industrial spaces that are a part of any of the alternatives for the project. Reducing the need to heat or cool structures by improving thermal integrity will result in a reduced expenditure of energy and a reduction in pollutant emissions. The installation of automated time clocks and occupant sensors is not applicable to this project.

26: Provide adequate ingress and egress at all entrances to facilities to minimize vehicle idling at curbsides. This measure would improve traffic flow into and out of the parking lot.

27: Provide local shuttle and regional transit systems and transit shelters. This measure is recommended, and is already included in the project. Such a program will reduce the VMT associated with the project.

28: Provide dedicated turn lanes as appropriate. This measure would reduce traffic congestion and would, therefore, reduce motor vehicle emissions.

29: Provide dedicated parking spaces with electrical outlets for electrical vehicles. This measure would accommodate electric car charging if any electric cars are purchased by employees or by people who use the facilities on the project site. The air quality benefit depends upon the number of employees driving electric cars which is unknown in this case.

30: Provide preferential parking to high occupancy vehicles and shuttle services, and charge parking fees to low occupancy vehicles.

31: Establish a Transportation Management Association (TMA) which creates incentives for employees to rideshare. This will include a employee transportation coordinator. Ride pool data should be made available to those working in the buildings.

32: Install energy efficient street lighting.

33: Introduce window glazing, wall insulation, and efficient ventilation methods. The

construction of buildings with features that minimize energy use is already required by the Uniform Building Code.

3.3 Regional Impacts After Mitigation Measures

The short term construction emissions due to the proposed project will be reduced to insignificant levels after the mitigation measures. However, the long term NOx emissions due to the proposed project will be above the SCAQMD significant threshold, and therefore, the project is considered to have a regional air quality impact. With the recommended mitigation measures above, the proposed project will reduce emissions to an extent, but the emissions, specifically NOx levels, would still be significant.

CONSTRUCTION EMISSIONS
Includes 1993 CEQA AQ Handbook Data
(This spreadsheet references ** Air Emissions Database **)

Project: Musick Jail Expansion

Construction Employee Travel Emissions

Enter Number of Employees on Construction Site:	*15*
Enter Average Trip Length for Employee Travel to Site:	*20*
Enter Area:	*1*

(1 for Orange County, 2 for L.A. County, 3 for Riverside Co., or 4 for San Bernardino)

	CO	ROG	NOx	PM10	SOx
Employee Travel Emissions (lbs./dy)	11.72	1.20	1.16	0.16	0.08

PM10 Emission Source: Page 9-3 of 1993 CEQA Handbook

Particulate Emissions from Grading Activities

Input Data	
Project Size (in acres):	*100*
Grading Cycle (in months):	*3*
Percent Grading Occurs:	50%
Construction Completion (in years):	*2*
Assumptions	
PM10 Emissions (in tons/month/acre):	0.40
Watering Reduction:	50%
Results	
Total Emissions (in tons):	59.40
Total Emissions (in pounds):	118,800
Annual Emissions (in tons/year):	29.70
Annual Emissions (in pounds/year):	59,400
Average Daily Emissions (in tons):	0.08
Average Daily Emissions (in pounds):	163
Peak Emissions (tons/day):	0.16
Peak Emissions (pounds/day):	325

Emissions from Grading Equipment

Enter number of pieces for each type of equipment:

		CO	ROG	NOx	PM10	SOx
Scrapers:	*1*					
Daily Emissions (lbs./day)		10.00	2.16	30.72	3.68	3.28
Loaders:	*0*					
Daily Emissions (lbs./day)		0.00	0.00	0.00	0.00	0.00
Tracklaying Tractors:	*1*					
Daily Emissions (lbs./day)		2.56	0.96	10.08	0.90	1.12
Motor Grader:	*1*					
Daily Emissions (lbs./day)		1.21	0.31	0.43	0.49	0.69
Wheeled Dozers:	*0*					
Daily Emissions (lbs./day)		--	--	--	0.00	0.00
Water Trucks:	*1*					
Daily Emissions (lbs./day)		14.40	1.52	33.36	3.60	2.08
Miscellaneous:	*1*					
Daily Emissions (lbs./day)		5.40	0.12	13.60	1.12	1.14

	CO	ROG	NOx	PM10	SOx
Grading Equipment Emissions (lbs./day)	33.57	5.07	88.19	9.78	8.31

TOTAL CONSTRUCTION EMISSIONS

	CO	ROG	NOx	PM10	SOx
Total Emissions (lbs./day)	**45.29**	**6.28**	**89.36**	**172.68**	**8.39**

AIR EMISSIONS

Revision 7/95 (includes 1993 CEQA Air Quality Handbook Update)

Project: Musick Jail Expansion *(enter in italics only)*
Study Year: *2010*
Area: *1*
(Enter 1 for Orange County, 2 for Los Angeles County, 3 for Riverside County, or 4 for San Bernardino County)

VEHICULAR EMISSIONS Emission Factor Sources: EMFAC7F and BURDEN7F

Speed (mph)=	25
Number of Trips=	*4,253*
Average Trip Length=	*13.7*
Vehicle Miles Traveled=	*58,266*

Pollutant	CO	ROG	NOx	PM10	SOx
Factor (gm/mi)	*2.24*	*0.25*	*0.68*	*0.16*	0.07
Emis. (Lb/Dy)	287.74	32.11	87.35	20.55	8.99
Emis. (Tn/Dy)	0.14	0.02	0.04	0.01	0.00
Factor (gm/trip)	*5.11*	*1.47*	*0.78*	*0.00*	0.07
Emis. (Lb/Dy)	47.91	13.78	7.31	0.00	0.66
Emis. (Tn/Dy)	0.02	0.01	0.00	0.00	0.00
Total Vehicular Emissions (Lb/Dy)	335.65	45.90	94.66	20.55	9.65
Total Vehicular Emissions(Tn/Dy)	0.17	0.02	0.05	0.01	0.00

ON SITE EMISSIONS DUE TO NATURAL GAS COMBUSTION Total daily natural gas consumption was provided by Culbertson, Adams & As

Unit Type	Ft3/DU/Mo.	DU or Ft2*	Gas Use (Ft3/Day)	
	Total (Ft2)	0	417,094	Total

Pollutant	CO	ROG	NOx	PM10	SOx
Factor (lbs/10^6 ft3)	20	5.3	0.7	0.2	0
Emis. (Lb/Dy)	8.34	2.21	0.00	0.08	0.00
Emis. (Tn/Dy)	0.00	0.00	0.00	0.00	0.00

OFF SITE EMISSIONS DUE ELECTRICAL GENERATION Total daily electric consumption was provided by Culbertson, Adams & Ass

Unit Type	SCE KWH/Unit/Yr	LADWP KWH/Unit/Yr	Number of Units or Ft2	Electrical Use (KWH/Day)	
Jail		Total (Ft2)	0	58,584	Total

Contaminant	CO	ROG	NOx	PM10	SOx
Factor (lbs/MWH)	0.2	0.01	1.15	0.04	0.12
Emis. (Lb/Dy)	11.72	0.59	67.37	2.34	7.03
Emis. (Tn/Dy)	0.01	0.00	0.03	0.00	0.00

TOTAL EMISSIONS

Contaminant	CO	ROG	NOx	PM10	SOx
Emis. (Lb/Dy)	355.71	48.69	162.03	22.98	16.68
Emis. (Tn/Dy)	0.18	0.02	0.08	0.01	0.01
2010 Orange Co. (Tn/Dy)	621.94	226.91	173.43	268.01	14.9
Percent Regional	0.029%	0.011%	0.047%	0.004%	0.056%

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